

wind storm passed over Madison and this place on the 19th. The hail-stones were as large as hen's eggs, and were destructive to corn and other crops.

Sharpsburg, Alleghany county, Pennsylvania: on the 22d, at 7.30 p. m., an unusually heavy hail storm occurred at De Haven Station, on the Pittsburg and Western Railroad.

Grafton, Walsh county, Dakota: on the afternoon of the 24th a disastrous thunder and hail storm passed over this vicinity. The storm travelled eastward, and from Saint Thomas across the Red River into Minnesota, it passed over an area five miles in width and thirty in length. Within this space hail-stones fell as large as hen's eggs and were unusually destructive. The wheat crop on 250,000 acres is reported to have been entirely destroyed, leaving many farmers destitute. Several persons were severely injured.

Saint Vincent, Minnesota: a very heavy thunder-storm, accompanied by rain and hail, occurred here on the afternoon of the 24th; serious injury was sustained by all kinds of vegetation.

Warren, Marshall county, Minnesota: this county was visited by a destructive hail-storm on the night of the 24-25th. The storm commenced at the town of Argyle, and passed over the towns of Middle River, Alma, Toldol, and Comstock. Hail as large as hen's eggs fell for about twenty minutes, destroying grain and breaking windows. It is reported that 25,000 acres of grain were destroyed in the vicinity of Mayville.

Sharon, Mercer county, Pennsylvania: on the afternoon of the 29th a destructive hail storm occurred in this county. Corn and other crops were in many places completely ruined.

Williamsport, Lycoming county, Pennsylvania: on the afternoon of the 29th a hail storm of great severity visited the western part of this county. Hail fell in great quantities, and many of the stones were as large as hen's eggs.

Hail was also reported to have fallen in the various states and territories on the following dates:

Arkansas.—Little Rock, 10th.

Colorado.—Pike's Peak, 2d, 17th, 19th; Montrose, 12th.

Connecticut.—New Haven, 18th; Southington, 29th.

Dakota.—Webster, 2d; Bismarck, Fort Totten, and Fort Yates, 3d; Fort Meade, 6th.

Illinois.—Pekin, 9th; Windsor, 9th, 14th; Chicago, 13th.

Indiana.—Logansport, 12th; Lafayette, 12th, 13th.

Iowa.—Keokuk, 9th; West Union, 12th.

Kansas.—Salina, 7th; Allison, 18th.

Kentucky.—Louisville and Frankfort, 14th.

Maine.—Portland, 19th.

Massachusetts.—Heath, 26th, 27th; Edgartown and Princeton, 30th.

Michigan.—Detroit and Grand Haven, 13th.

Missouri.—Central College, 13th.

Montana.—Fort Assinaboine and Helena, 4th.

Nebraska.—Valentine, 27th; Hay Springs, 30th.

Nevada.—Carson City, 16th, 19th.

New Jersey.—Readington, 18th; Sandy Hook, 30th.

New York.—Penn Yan, 17th; White Plains and Factoryville, 18th; Ithaca and Menand's Station, 29th.

Ohio.—North Lewisburg, 7th; Cincinnati, Yellow Springs, and Tiffin, 14th; Cleveland, 13th, 14th, 29th; Columbus and Garrettsville, 17th; Hiram, 17th, 26th.

Oregon.—Roseburg, 19th.

Pennsylvania.—Pittsburg, 17th; Wellsborough and Eastbrook, 17th, 26th.

South Carolina.—Stateburg, 12th, 14th; Spartanburg, 14th.

Tennessee.—Nashville, 10th; Knoxville, 10th, 14th; Austin, 13th.

Utah.—Frisco, 19th.

Vermont.—Strafford, 18th.

Virginia.—University of Virginia, 8th, 23d; Dale Enterprise, 14th, 25th; Wytheville, 8th, 14th; Chincoteague, 23d; Variety Mills, 27th.

West Virginia.—Clarksburg, 13th.

Wisconsin.—Madison, 10th, 11th, 19th.

SLEET.

Sleet occurred at Pike's Peak, Colorado, on the following dates: 4th to 7th, 12th, 16th, 20th, 21st, 22d, 25th, 27th, 31st; at Mount Washington, New Hampshire, on the 23d.

RAIN FROM A CLOUDLESS SKY.

The observer at Louisville, Kentucky, states that "on the 27th, at 12.30 a. m., the unusual phenomenon of rain from a cloudless sky was observed; light rain fell for ten minutes."

TEMPERATURE OF WATER.

The following table shows the highest and lowest temperatures of water observed at the several stations; the monthly ranges of water temperature; the average depth at which the observations were made; and the mean temperature of the air:

Temperature of water for July, 1886.

Station.	Temperature at bottom.		Range.	Average depth, feet and tenths.	Mean temperature of the air at station.
	Max.	Min.			
Atlantic City, New Jersey	77.0	69.4	7.6	12.1	72.2
Alpena, Michigan	72.6	63.5	9.1	12.5	64.4
Augusta, Georgia	86.0	70.4	15.6	12.9	77.9
Baltimore, Maryland	78.9	72.0	6.9	11.9	74.4
Block Island, Rhode Island	66.9	61.4	5.5	9.0	68.7
Boston, Massachusetts	68.7	63.1	5.6	21.3	70.8
Buffalo, New York	76.0	69.0	7.0	10.3	68.5
Cedar Keys, Florida	85.0	80.3	5.3	8.0	80.3
Charleston, South Carolina	85.1	80.4	4.7	38.2	79.9
Chicago, Illinois	72.7	67.0	5.7	9.1	71.4
Chincoteague, Virginia	84.1	72.0	12.1	3.5	74.5
Cleveland, Ohio	75.0	67.9	7.1	14.0	69.9
Detroit, Michigan	72.9	67.8	5.1	26.6	71.0
Duluth, Minnesota	69.4	59.3	13.1	9.6	66.1
Eastport, Maine	51.3	46.6	4.7	16.7	60.8
Escanaba, Michigan	66.7	57.3	9.4	18.2	65.5
Galveston, Texas	88.8	84.1	4.7	13.2	82.8
Grand Haven, Michigan	74.5	61.0	13.5	19.0	65.9
Indianola, Texas					
Jacksonville, Florida	85.7	81.0	4.7	18.0	80.9
Key West, Florida	89.5	82.7	6.8	18.6	85.7
Mackinaw City, Michigan	67.5	61.3	6.2	10.0	64.5
Macon, Fort, North Carolina	85.9	74.4	11.5	11.9	78.9
Marquette, Michigan	64.3	46.2	18.1	12.0	64.1
Milwaukee, Wisconsin					
Mobile, Alabama	84.5	79.1	5.4	17.7	78.6
New Haven, Connecticut	76.5	67.0	9.5	16.6	70.1
New London, Connecticut	70.3	62.0	8.3	13.4	70.2
New York City	75.8	68.3	7.5	16.2	72.9
Norfolk, Virginia	81.2	73.3	7.9	16.5	76.1
Pensacola, Florida	80.5	81.3	5.2	17.5	80.2
Portland, Maine	60.9	54.6	6.3	16.9	66.5
Portland, Oregon	75.4	66.4	9.0	54.0	67.4
Sandusky, Ohio	78.6	71.5	7.1	11.4	71.0
Sandy Hook, New Jersey	75.0	66.9	8.1	13.6	72.7
San Francisco, California	62.2	55.8	6.4	37.1	59.1
Savannah, Georgia	81.7	76.2	5.5	10.5	80.5
Smithville, North Carolina	84.8	76.2	8.6	10.8	79.5
Toledo, Ohio	77.0	72.1	5.9	13.5	71.4
Wilmington, North Carolina	82.9	76.1	6.8	10.3	78.6

• Observations temporarily suspended.

WINDS.

The most frequent directions of the wind during July, 1886, are shown on chart ii by the arrows flying with the wind; they are also given in the table of miscellaneous meteorological data. In the Gulf States and Florida the prevailing direction of the wind is from the south; in the south Atlantic states from the southwest. In all other districts it is variable.

HIGH WINDS.

[In miles per hour.]

Wind-velocities of fifty or more miles per hour were recorded during the month, as follows:

Mount Washington, New Hampshire, 70, w., 6th; 82, w., 7th; 64, nw., 8th; 59, nw., 10th; 66, w., 11th; 70, w. 12th; 55, se., 14th; 65, se., 15th; 84, sw., 16th; 59, w., 19th; 59, w., 20th; 59, nw., 22d; 58, nw., 23d; 65, nw., 24th; 50, nw., 27th; 50, w., 29th; 62, w., 30th.

Pike's Peak, Colorado, 61, w., 1st.

Nashville, Tennessee, 75, nw., 10th.

Key West, Florida, 52, sw., 18th.

Fort Elliott, Texas, 64, nw., 19th.

Fort Assinaboine, Montana, 59, w., 26th.

Sandy Hook, New Jersey, 72, nw., 30th.